

Computing for Human Services

Chief Editor

Shihab Ahmed Hameed

Electrical and Computer Engineering-IIUM University

Editors

Othman Omran Khalifa

Electrical and Computer Engineering-IIUM University

Aisha Hassan Abdullah

Electrical and Computer Engineering-IIUM University



IIUM Press

Computing for Human Services

Chief Editor

Shihab Ahmed Hameed

Electrical and Computer Engineering-IIUM University

Editors

Othman Omran Khalifa

Electrical and Computer Engineering-IIUM University

Aisha Hassan Abdullah

Electrical and Computer Engineering-IIUM University



IIUM Press

Published by:
IIUM Press
International Islamic University Malaysia

First Edition, 2011
©IIUM Press, IIUM

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without any prior written permission of the publisher.

Perpustakaan Negara Malaysia

Cataloguing-in-Publication Data

ISBN:978- 967-418-161-1

Member of Majlis Penerbitan Ilmiah Malaysia – MAPIM
(Malaysian Scholarly Publishing Council)

Printed by :

IIUM PRINTING SDN. BHD.

No. 1, Jalan Industri Batu Caves 1/3

Taman Perindustrian Batu Caves

Batu Caves Centre Point

68100 Batu Caves

Selangor Darul Ehsan

Book Contents

Chapter No	Chapter Title, Author(s)	Page No
	Book Contents	v
	Preface	ix

Part I Computing to Serve Educational Aspects

Chapter 1	Status of Higher Education in Developing and Islamic World, <i>Shihab A. Hameed</i>	3
Chapter 2	Planning the Future of Higher Education in Developing and Islamic World, <i>Shihab A. Hameed</i>	13
Chapter 3	Internet Impact on Education, <i>Shihab A. Hameed</i>	21
Chapter 4	Eliminating Internet Weakness in Education, <i>Shihab A. Hameed</i>	29
Chapter 5	Computing Role in Educating Deaf Children, <i>Haidawati Mohamad Nasir, Othman Omran Khalifa, Shihab A. Hameed</i>	37
Chapter 6	Management of Research and Development in Educational Organizations, <i>Rashid A. Saeed, Othman O. Khalifa, Aisha Hassan, Shihab A. Hameed</i>	43
Chapter 7	Computer Implementable Quick Fourier Transform (QFT) for Engineering Educators <i>Abdulfattah A. Aboaba, Shihab A. Hameed, Othman O. Khalifa, Aisha H. Abdalla, Ado Dan-Isa, Jubril D. Jiya., James Katende, Abdulfattah B. Mustapha, & Abdullahi L. Amoo</i>	53
Chapter 8	Virtual-Learning Content Management System Using Problem-Based Learning (PBL), <i>Norul Ashikin Bt Abu Kasim, Teddy Surya Gunawan</i>	63
Chapter 9	Development of Final Year Project Portal for Engineering Program, <i>Teddy Surya Gunawan, Abdul Mutholib, Mira Kartiwi</i>	71

Part II

Computing to Serve Ethical, Social, and Environmental Aspects

Chapter 10	Software Engineering and Ethical Values, <i>Shihab A. Hameed</i>	83
Chapter 11	New Model for Software Engineering Ethical Principles <i>Shihab A. Hameed</i>	91
Chapter 12	Hajj and Information Technologies: Analytical Study, <i>Shihab A. Hameed</i>	101
Chapter 13	Framework for Comprehensive Hajj Model with ICT, <i>Shihab A. Hameed</i>	109
Chapter 14	RFID for Hajj Identification Guide Information and Personnel Announcement, <i>Dzul I'zzat Bin Julaihi, Ahmad F. Abdul Rahman, Othman O. Khalifa</i>	121
Chapter 15	Development of Online Application for Muslim Traveler with UML Diagram, <i>Teddy Surya Gunawan, Afif Abul Fattah Che Omar, Shihab A. Hameed, Mira Kertiwi</i>	133
Chapter 16	Computers and Electronic Devices Waste: Fundamental Facts <i>Shihab A. Hameed</i>	139
Chapter 17	Computers and Electronic Devices Waste: Analysis and Solution, <i>Shihab A. Hameed</i>	149
Chapter 18	ICT and Environmental Problem, <i>Shihab A. Hameed</i>	157
Chapter 19	Strategy for Green ICT: An Islamic View, <i>Shihab A. Hameed</i>	165

Part III

Computing to Serve Healthcare and Medical Aspects

Chapter 20	Fundamental to Medical Data Centre, <i>Shihab A. Hameed, Waleed A. Badurik</i>	175
Chapter 21	Network Based Telemedicine for Fetal ECG Monitoring, <i>M. I. Ibrahimy, S. M. A. Motakabber</i>	185
Chapter 22	Electronic Patient Medical Record to facilitate Patient Monitoring, <i>Shihab A. Hameed, Shazana Mustafa, Aina Mardhiyah, Vladimer Miho, Aisha Hassan</i>	195

Chapter 23	Developing EPMR to Serve Effective Patient Monitoring Database, <i>Shihab A. Hameed, Shazana Mustafa, Aina Mardhiyah, Vladimer Miho</i>	203
Chapter 24	Interactive Web-Based Model for Medical Emergency, <i>Shihab A. Hameed, Shahina shabnam, Nur hafizah Chek Nuh , Nur Huda Bt Salim</i>	209
Chapter 25	Mobile Web Model to Serve Healthcare, <i>Shihab A. Hameed, Vladimer Miho</i>	221
Chapter 26	SMS to Facilitate Healthcare and Emergency, <i>Shihab A. Hameed, Shahina Shabnam Bt Mohd Sharifudeen, Nur hafizah Chek Nuh , Nur Huda Bt Salim, Aisha Hassan, Othman Khalifa</i>	229

Part IV

Computing to Serve Security and Privacy Aspects

Chapter 27	Wireless Technology to Secure Emergency and Guidance, <i>Shihab A. Hameed, B. A. Aliyu</i>	237
Chapter 28	Authentication Enhancement for Medical Data Centers, <i>Shihab A. Hameed, Waleed A. Badurik</i>	245
Chapter 29	Integrated Authentication Model: Face Verification, <i>Shihab A. Hameed, Waleed A. Badurik</i>	255
Chapter 30	Confidentiality to Service Medical Emergency Model, <i>Shihab A. Hameed, Habib Yuchoh, Wajdi F. Al-Khateeb</i>	261
Chapter 31	Fundamental to Password based security <i>Shihab A. Hameed, Ahmed Fathi Zainazlan, Herman Sazwan nor rahim</i>	269
Chapter 32	Graphical Password Security Model, <i>Shihab A. Hameed, Ahmed Fathi Zainazlan, Herman Sazwan nor rahim</i>	277
Chapter 33	Automobile Monitoring and Tracking, <i>Shihab A. Hameed, Othman Khalifa, Aisha Hassan</i>	287

Part V
Computing to Serve Industrial and other Aspects

Chapter 34	Speech to Text to Sign Language, <i>Khalid Khalil Kamil, Othman O. Khalifa</i>	297
Chapter 35	Speech to Sign Language Interpreter System (SSLIS), <i>Khalid Khalil El-Darymli, Othman O. Khalifa and Hassan Enemosah</i>	313
Chapter 36	Speech Codec for a Voice over IP (VoIP) Systems, <i>Othman O. Khalifa, Shihab A. Hameed</i>	323
Chapter 37	Reconfigurable Platform in Embedded System, <i>Amelia Wong Azman</i>	329
Chapter 38	Smart Grid Communication Layer, <i>Norulhuda Lokeman, Norizan Mohd Hassan, Sigit PW Jarot</i>	337

Chapter 21

Network Based Telemedicine for Fetal ECG Monitoring

M. I. Ibrahimy¹ and S. M. A. Motakabber²

¹ Kulliayyah of Engineering, International Islamic University Malaysia-IIUM

²Faculty of Engineering and Built Environment, Universiti Kebangsaan Malaysia-UKM

21.1. Introduction

The term telemedicine refers to utilization of information technology to exchange medical data to distribute consultations, measures, exams or monitoring services over geographic distances. Generally it refers to the delivery of clinical services. The terms telehealth and e-health are often used more broadly to include nonclinical activities with the clinical services, such as health research, health education, health administrations, and so on. The term e-care is sometimes used as a synonym for telemedicine, but the federal government includes technologies to aid in advanced analytics, as well as clinical services. Though the telemedicine has not gained extensive adoption in many countries including the United States, health care organizations and numerous government and nongovernment agencies are advertizing it as a way to reduce unnecessary hospital visits and to offer specialized services to isolated, homebound or underserved populations.

Telehealth is used to deliver the health-related services and information via telecommunications technologies. Telehealth could be as simple as two health professionals discussing a case over the telephone or as more sophisticated as doing robotic surgery between facilities at the different places of the world. Telehealth is an expansion of telemedicine, it includes administrative and educational functions related to telemedicine, now telehealth uses a lot of technology solutions. For example, physicians use internet to communicate with patients, order drug prescriptions and provide other health services. The clinical uses of telehealth technologies to transmission of medical images for diagnosis, groups or individuals exchanging health services or online education via videoconference called real-time telehealth. Transmission of medical data for diagnosis or disease management also referred to as remote monitoring and advice on prevention of diseases and promotion of good health by patient monitoring and continuous follow-up etc. The nonclinical uses of telehealth technologies are